IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF TEXAS
HOUSTON DIVISION

EXXON MOBIL CORPORATION,

Plaintiff,

v.

UNITED STATES OF AMERICA,

Defendant.

Civil Action Nos. H-10-2386 (LHR)
H-11-1814 (LHR)

REBUTTAL DECLARATION OF RICHARD LANE WHITE

I, Richard Lane White, declare and state as follows:

1. My name is Richard Lane White. I am over eighteen (18) years of age and reside at 1230 River Road, Plainfield, NH 03781. I have personal knowledge of the facts set forth in this declaration and am competent to testify to them if necessary.

2. My recent declaration (December 15, 2017) as well as my prior reports submitted in this case provide a summary of my qualifications.

3. I have been retained by counsel for Exxon Mobil Corporation (Exxon) to evaluate cost allocation issues that may form the basis for the Court to develop an equitable allocation determination related to Exxon's past and future wartime-related response costs at two Exxon facilities: the Baytown Facility in Baytown, TX (Baytown Facility or Baytown Site) and the Baton Rouge Facility in Baton Rouge, LA (Baton Rouge Facility or Baton Rouge Site) (collectively, the Facilities or Sites).

4. I have developed a methodology for allocating the response costs at each site to the respective parties, *i.e.*, Exxon and the United States of America (United States or Government) in these two cases. Key points related to this allocation are described in further detail below.

5. It is my opinion that my proposed allocation framework is reasonable and equitable and based on sound technical and scientific data.

6. **A reasonable and equitable allocation should account for the integration of the site-wide production operations and waste system at each Facility**. My allocation reflects the close integration of the Government Plancors and Baytown Ordnance Works (BOW) operations with the refinery operations. In its Phase 1 decision, the Court found that the Government plants and the refineries constituted a single "facility" under CERCLA, given "the interrelated need for avgas and rubber production, the plants' and refineries' proximity to each other and location on the same sites, and the shared destination for the released wastes".[1] In addition, according to the expert opinions and findings of Gregory Kipp, Jere M. Johnson, and A.J. Gravel, as well as the historical wartime record, the Government-owned plants were fully integrated so that they produced essential raw materials for the refinery and vice versa, relied on the refinery's infrastructure for necessary utilities and operational support, and relied upon the refinery waste processing system to manage and dispose of much of their wastes at both Facilities.[2] The Government intended and required this close integration; for example, in wartime, internal Government correspondence, the Government's Director of Refining stated that "the raw materials used as charging stock to the new facilities comprise gases derived from other refinery field and plant operations. Therefore, the overall facilities are integrally interspersed throughout the oil company's properties and cannot be claimed as isolated units."[3] It is my opinion that there is a

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1 *Exxon Mobil Corp. v. United States*, 108 F. Supp. 3d 486, 519 (S.D. Tex. 2015).

2 White Supplemental Report (January 2017), pp. 49-78.

3 White Supplemental Report (January 2017), page 54 quoting Letter from W. Gary, PAW Director of Refining to R. Eicholz, Office of Legislative Counsel, Treasury Dept. at pp. 1-2 (A003396 - A003999 at A003396 to A003397).

sufficient factual basis regarding the close integration of the operations of the Government plants, which were part of this overall system, and refineries to fully take this integration into account in my allocation.

7. Similarly, the waste system was designed to function as a single, site-wide, inter-dependent system at each Facility. According to the historical record and the findings of experts Messrs. J. Johnson and Kipp, each Facility contained a singular waste system in which wastewaters generated by the production operations were conveyed through inter-connected sewers and drainage canals to a series of oil/water separators for processing, and then the wastewaters were ultimately discharged to an adjacent water body, while the sludge generated by the operation of the separators was disposed of (at least prior to the post-war effluent improvement program) into various sludge pits.[4] Then, after the war, one of the primary results of the effluent improvement program at each Facility was that the waste system was examined as a whole and significantly upgraded with the addition of various, state-of-the-art waste handling improvements, such as, for example, pre-separators, effluent filtration unit or effluent treatment unit, and a sour water stripper.[5] While the post-war waste system was a greatly improved version of the wartime waste system, both were a singular, self-contained system. This is further illustrated, for example, by two schematics in a 1952 Humble Oil report regarding the Baytown Facility in which the Humble engineers depict in one schematic the mid-1940s facility-wide "Waste Disposal System Before Beginning Effluent Improvement Program", and then in the second schematic the facility-wide "Present Waste Disposal System" after many of the improvements had been implemented.[6] The Government's allocation expert – Matthew Low – has assumed incorrectly in support of his allocation methodology that all of the waste units were independent and separate from all other waste units; however, Mr. Low had to dissect the singular waste system at each Facility into its

[4] See Expert Report of Jere M. Johnson (June 2012), pp. 80-91 and 93-108.

[5] See Supplemental Expert Report of Gregory G. Kipp (December 2016), pp. 11-14; Expert Report of Jere M. Johnson (June 2012), pp. 110-21 and 126-37.

[6] See Expert Report of Jere M. Johnson (June 2012), pp. 84 and 114.

component parts (i.e., waste units) to support his flawed assumption. In my opinion and given that the waste system at each Facility was designed to function as a single, dependent system, the waste units which comprise the waste system should be viewed as complementary and integrated for purposes of allocation; in fact, it would be entirely inappropriate to treat the waste units separately and individually at each Site.

8. Accordingly, I distributed response costs (and contamination) to years of relevant operation on a site-wide basis (the "intra-class allocation" step).[7] To distribute costs to years I first used the well-established proxy measure of relative "production," where production serves as a proxy for waste generation and contaminant contribution, and thus the related costs. I used this data set because it was the only complete data set available for analysis; it is my view that allocations are much more reliable when they are based on a set of comprehensive available data. I specifically used for production the annual crude oil throughput capacity of each refinery as the surrogate for the amount of waste generated per year. The technical experts for both parties concurred that waste generation at these two Exxon refineries was proportional to the crude processing rate, although process control and waste handling improvements should also be taken into account.[8] Second, because the production-based contamination surrogate must be modified to reflect factors that impact waste generation and/or contaminant contribution, I also utilized "adjustments" for waste process efficiency that accounted for each Facility's implementation of process control and waste handling improvements. I applied both the production-based contamination surrogate and the waste process efficiency "adjustments" on a site-wide basis due to the integration of the production operations, process controls and waste handling system at each Site. This is consistent with how allocations have been performed at other industrial facilities that were designed to produce wartime products.

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[7] See Declaration of Richard Lane White (December 15, 2017), ¶¶ 12-23.

[8] White Supplemental Report (January 2017), pp. 14-17.

9. **1985 is the appropriate end point for the intra-class allocation**. As discussed above, the first step in my allocation process (the intra-class allocation) assigns costs (and the waste or contamination) to years of relevant operation. The time period that I assign costs to is the year of initial operations at each Facility through 1985. The date of initial operations for the Baytown Facility is 1920, and the date of initial operations for the Baton Rouge Facility is 1909. I determined that 1985 was the appropriate end point because by or before this date the operations at both Facilities would have been subject to stringent environmental regulatory and permitting requirements under both state and federal law, such as the Clean Water Act of 1972, 33 U.S.C. §§ 1251 *et. seq.*, and the Resource Conservation and Recovery Act of 1976, 42 U.S.C. §§ 6901 *et. seq.* After 1985, discharges from these Facilities would generally only have been allowed if they were consistent with public health and environmental requirements. Accordingly, it is my opinion that 1985 is a reasonable end point for the years of allocation because any post-1985 contamination would have been negligible.

10. **Significant data supports the waste process efficiency "adjustments".** As discussed in ¶ 8, I utilized "adjustments" for waste process efficiency that account for each Facility's implementation of process control and waste handling improvements, and these "adjustments" are identified and described in my reports.[9] These "adjustments" were based on historical records regarding the timing and nature of the post-war, plant-level process control improvements and waste handling improvements, and related historical data memorializing the effects of these improvements on pollution control and reduction. It is my opinion that there is a more than sufficient amount of historical data in this case to support these waste reduction adjustments as part of my allocation, and furthermore and as discussed in ¶ 13 below, a number of experts evaluated and confirmed that these historical data were reliable and my use of these data for this purpose was valid, appropriate and reasonable.

[9] See White Supplemental Report (January 2017), page 30 (list and descriptions of the production adjustments).

11. The record includes a significant amount of historical documentation identifying the post-war pollution control practices adopted at both Facilities, and their effect on pollution control and reduction. For example, the record includes a technical document authored for the American Petroleum Institute by Jody Perkins which demonstrated that the Baytown Facility had achieved a 70% reduction in the amount of separator sludge generated at the refinery on a per barrel basis between 1947 and 1957.[10] Other examples of historical documents showing waste reductions and improvements at the Baytown Site include the following:

a. "New Effluent Filtration Unit Goes Into Operation at Baytown," The Humble Bee, September 1951 (BAYC-00013892 to BAYC-00013897) (A002462 - A002467).

b. "Stop That Leak!", The Humble Way, Jan.-Feb. 1952, (BAYC-0013898 to BAYC-00013901) (A002425 - A002428).

c. "Minutes of the 22nd General Meeting" (Refinery Loss Committee, Humble; Mar/Apr. 1952) at p. S-8-5 (MIS-00031624 to MIS-00031667) (A002347 - A002390).

d. Brady, S.O. "Effluent Improvement Program at Humble's Baytown Refinery" reprinted in *Environmental Bulletin: Proceedings of the Ninth Industrial Waste Congress* (Purdue Univ.; May 1954) (BAYC-00013615 to BAYC-00013620) (A000823 - A000828).

e. Brady, S.O., "Solids Waste Disposal," *The Oil and Gas Journal*, Vol. 56, No. 9 (Mar. 3, 1958) (BAYC-00013621 to BAYC-00013624) (A002488 - A002491).

f. Resen, L., "Humble Attacks Pollution at Baytown - Part 1" The Oil & Gas Journal (Oct. 5, 1959) (BAYC-00013625 to BAYC-00013631) (A002413 - A002419).

g. Humble Oil, "Supplemental Engineering Report" (attached to "Amendment to Wastewater Permit No. 00592," (Texas Water Pollution Control Board, June 24, 1964)) (BAYC-00013637 to BAYC-00013648) (A002492 - A002503).

h. Memorandum from H. H. Maier , Humble to J. M. Harvey, "Air and Water Pollution Effect on Plant and Field Installations, Baytown Refinery," Sept. 23, 1964 (BAYC-00000800 to BAYC-00000805) (A002504 – A002509).

[10] Perkins, J., *An Historical Overview of Solid Waste Management in the Petroleum Industry: Discussion Paper No. 062* (American Petroleum Institute, October 1990) (MISC-00010288 to MISC-00010307) (A002468 - A002487 at A002483 to A002484).

i. "How Humble Combats Water and Air Pollution," The Oil & Gas Journal (Mar. 28, 1966) (BAYC-00013649 to BAYC-00013653) (A002510 - A002514).

j. Brady, S. O. et al. "History of Baytown Refinery's Activities in Air and Water Pollution Control" (Humble; 1966) (BAYC-00000106 to BAYC00000116) (A002396 - A002406).

k. Memorandum re "Baytown Refinery Air and Water Conservation Program" dated Jan. 15, 1970 from S. O. Brady, Humble (BAYC00000315 to BAYC-00000330) (A002435 - A002450).

This is a significant amount of reliable historical data and, in fact, is more than necessary in my view from an allocation perspective to support the use of the waste process efficiency "adjustments" that have been adopted as part of my allocation methodology. It is my view that this is more than enough to satisfy the data requirements necessary to implement a valid allocation here, and far more than I often see in other allocation matters.

12. Examples of historical documents showing waste reductions and improvements at the Baton Rouge Site include the following:

a. "Operation of the Oil Conservation Department at the Baton Rouge Refinery," May 1950 (BRHIS-00013937 to BRHIS-00013989) (A002590 - A002642).

b. "Master Separator Gives Water From Refinery Final Clean Up Before Discharge into River," The Stanocolan, January 9, 1953 (BRC-00022407 to BRC-00022408) (A002643 - A002674).

c. Robert T. Denbo, "Effluent Control at a Large Oil Refinery," Environmental Science and Technology, v. 5, No. 11, November 1971 (BRC-00022821 to BRC-00022826) (A002675 - A002680).

This is a significant amount of reliable historical data and in fact, is more than necessary in my view from an allocation perspective to support the use of the waste process efficiency "adjustments" that have been adopted as part of my allocation methodology. It is my view that this is more than enough to satisfy the data requirements necessary to implement a valid allocation here, and far more than I often see in other allocation matters.

13. A number of experts reviewed and evaluated these and other historical records regarding the timing and nature of the post-war, plant-level process control improvements and

waste handling improvements, and related historical data confirming the effects of these improvements on pollution control and reduction.[11] Historical expert – Mr. Gravel – conducted research to locate and compile much of this historical information and data.[12] Refinery remediation expert – Mr. J. Johnson – examined the post-war records and data and found that from a technical perspective, the process control and waste handling improvements "resulted in large reductions in solid waste quantities and significant improvements in wastewater quality despite increases in annual crude oil throughput."[13] Forensic waste expert – Mr. Kipp – conducted a detailed analysis of the specific nature of these improvements and related historical data in order to determine, and ultimately confirm, that the historical data showing the quantitative oil loss reductions, slop or sludge reductions, wastewater volume reductions, and oil concentration reductions in the wastewater effluent were valid data points at both Sites.[14] In addition, both Messrs. Kipp and J. Johnson evaluated whether this historical data provided sufficient scientific support for the waste process efficiency "adjustments", and their timing and magnitude, that I employed in the allocation for the respective Sites, and concluded that these "adjustments" were indeed valid, appropriate and reasonable.[15] In fact, Mr. Kipp further found that the "process efficiency factors are actually conservative because they do not fully reflect significant advances in pollution control and reduction that occurred during time periods when quantitative data is not available, and do not fully reflect the synergistic effect of pollution control and reduction measures as a whole."[16]

14. Further, given that many of the documents described in ¶¶ 11-12 above were authored contemporaneously with the time of the improvements, and many were published in well-

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[11] White Supplemental Report (January 2017), pp. 18-24.

[12] See Expert Report of A. J. Gravel (June 2012), pp. 91-98 and 187-99.

[13] See Expert Report of Jere M. Johnson (June 2012), pp. 110-137.

[14] See generally Supplemental Expert Report of Gregory G. Kipp (December 2016).

[15] See Rebuttal Report of Jere M. Johnson (December 2012), pp. 52-56; Supplemental Report of Gregory G. Kipp (December 2016), pp. 33-34; White Supplemental Report (January 2017), pp. 19-21.

[16] See Supplemental Report of Gregory G. Kipp (December 2016), page 3, and also pp. 25-26 and 33-34.

regarded technical journals, in conjunction with the findings and opinions of the experts described in ¶ 13, it is my opinion that these data are reliable and would be appropriate to use in formulating a "production-based" allocation methodology. In fact, it is my opinion that there are significantly more reliable data in this case than in others involving events that took place as far back as World War II (WWII), given how challenging it can be to reconstruct historical events from many decades ago.

15. **The Government was involved in 100% of Facility processes and controlling the use of crude oil during the wartime period, and this should be accounted for in the allocation**. The second step of my allocation process is determining what costs are included. The Government mandated that these two Facilities be devoted to the maximum production of avgas and other war products, and employed numerous directives, orders, programs and other measures to compel these Facilities to operate their production operations continuously and with little downtime for war products production.[17] The Government's Petroleum Administration for War (PAW"), which one of the Government's own reports referred to as "the virtual czar of 100-octane in the United States", controlled these refineries and their use of crude oil in order to require them to produce the maximum amounts of avgas and other urgently needed war products possible.[18] According to a wartime Government report, "Refiners were instructed to sell and ship available components in such a manner to squeeze out the last barrel of product, regardless of commercial and economic considerations."[19] It is further my opinion that, given the nature of a refinery, and the fact that cracking a barrel of crude oil to make avgas and other wartime products necessarily creates other products as well, the Government was effectively involved in 100% of Facility processes during the wartime period. Put another way, the Government controlled the "front-end" of the production process, *i.e.*, the cracking of the crude, and due to the nature of refinery

[17] See Expert Report of A. J. Gravel (June 2012), pp. 20-27, 70-75, 84-86; Rebuttal Report of A. J. Gravel (Dec. 2012), pp. 15-24.

[18] See Expert Report of A. J. Gravel (June 2012), pp. 22 and 26.

[19] See Expert Report of A. J. Gravel (June 2012), page 82.

operations, was necessarily involved in all processes that occurred as a result of the processing of the crude oil.

16. During the war the Government set up the Planned Blending Program which controlled the full use of crude oil and other raw materials. Through this program and related requirements, PAW controlled both the Baytown and Baton Rouge refineries' supply of crude and other raw materials, required that all crude be processed to maximize avgas production, restricted many intermediate raw materials to be used only for avgas production, dictated the types and amounts of avgas and other war products to produce on a daily basis from the allocated crude and other raw materials, and virtually controlled all plant-level operations.[20]

17. In fact, it is my understanding that experts for both parties in this case have opined that it was technically necessary for the refineries to process all the crude allocated to maximize the production of avgas as required by the Government. For instance, Dr. James Kittrell, the Government's expert, testified in deposition that "to try to maximize the Avgas" a refinery would have to "run all the crude you have[.]"[21]

18. Refinery operations experts David B. Lerman and John M. Beath similarly opined that the Baytown and Baton Rouge Facilities had to process all of the crude oil in order to maximize avgas production. As a purely technical matter, Mr. Lerman stated that "[r]efiners cannot convert a barrel of crude oil solely into a barrel of a single product such as avgas." Mr. Lerman further stated that "all of the crude had to be processed to produce the avgas. . . . Therefore, all of the crude oil charged at Baytown and Baton Rouge contributed to the production of avgas during the WWII war effort" and "a reduction in crude distillation rate would have reduced avgas production."[22] Mr. Beath similarly stated that "it is my further opinion that all of the crude oil

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[20] See White Supplemental Report (January 2017), pp. 7-8.

[21] Dr. James R. Kittrell Dep. Tr. Vol. 1 (March 30, 2017), page 111 (A003315 – A003320 at A003318).

[22] Expert Report of David B. Lerman (September 2015), pp. 6-8 and 32.

processed at these refineries was necessary to meet these avgas production goals. The first step in the production of avgas was the processing of crude oil in the distillation units because such crude oil processing was necessary to produce the avgas base stock and the avgas components."[23]

19. Further, Messrs Lerman and Beath opined that in order to meet the Government's mandate of maximum avgas production, which simultaneously resulted in the production of a number of byproducts that were themselves war products, it required the integrated, and closely-coordinated operation of virtually the entire Baytown and Baton Rouge Facilities in which the Government assumed control over. Mr. Lerman stated that "[i]f a refinery is an orchestra, the individual process units are the instruments, and then the planning and scheduling function is the conductor" and "[t]o maximize avgas production for the WWII war effort, the government took over the planning and scheduling function and issued operational instructions" to both refineries for this purpose.[24] Mr. Beath opined that the maximum production of avgas mandated by the Government required the operation of virtually all of the process units in close coordination, and illustrated this in a flow chart of the wartime production operations.[25]

20. Given this record, it is my opinion that the Government was comprehensively involved in the operations of the refineries and their use of crude oil and that this factor should be accounted for as part of the allocation methodology. This situation is similar, if not identical, to other wartime cases where the plants were converted to war products production at the Government's direction.

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[23] Rebuttal Report of John M. Beath (December 2012), page 6.

[24] Expert Report of David B. Lerman (September 2015), pp. 28-29.

See White Supplemental Report (January 2017), pp. 37-38.

[25] Rebuttal Report of John M. Beath (December 2012), p. 6 and Figure 4 (attached to Exxon's summary judgment motion). Mr. Beath color-coded a 1943 Baton Rouge production flow diagram to depict how virtually all process units were involved in avgas production at the refinery.

See White Supplemental Report (January 2017), p. 38.

21. **There are a number of key equitable factors which should be considered by the Court in the equitable allocation determination.** I am certainly mindful that it is the province of the Court to decide which equitable factors are applicable and how they should be applied. I am merely recommending the equitable factors that I consider applicable and useful based on my past experience in other allocation cases and given the site-specific circumstances, and have provided a proposed allocation methodology in which such equitable factors could be incorporated and applied. I would suggest that the following equitable factors should be considered by the Court in determining the Government's "degree of involvement" for the wartime-related cleanup costs at both Sites: (a) the amount of control that the Government exercised over plant operations during the wartime period; (b) the knowledge and acquiescence of the Government in the contaminating activities; (c) the implementation of stringent wartime Government policies preventing the installation of necessary pollution control equipment that resulted in continued pollution after the war; and (d) the value or benefit of the contamination-causing activities in furthering the Government's national defense efforts. A number of other courts have considered these types of equitable factors in determining the Government's "degree of involvement" in plant operations in either similar wartime contexts involving war products production or comparable non-wartime contexts involving production for national defense-related purposes.[26]

22. **The wartime avgas supply contracts (AvGas Contracts) also should be considered in the equitable allocation determination because they memorialized the parties' intent that the Government would reimburse or indemnify Exxon for wartime-related "charges", including cleanup costs**. The U.S. Court of Appeals for the Federal Circuit ruled in

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[26] See White Supplemental Report (January 2017), pp. 79-87, 131-38; see, e.g., *Cadillac Fairview/Calif., Inc. v. Dow Chemical Co.*, 299 F.3d 1019, 1029-30 (9th Cir. 2002); *United States v. Shell Oil Co.*, 294 F.3d 1045, 1060-61 (9th Cir. 2002); *United States v. Shell Oil Co.*, 13 F. Supp. 2d 1018, 1026-27 (C.D. Cal. 1998); *Lockheed Martin Corp. v. United States*, 35 F. Supp. 3d 92, 123-24 (D.D.C. 2014); *Amer. Int'l Spec. Lines Co. v. United States*, No. 09-10743, 2013 WL 135405, at *4-5 (C.D. Cal. Jan. 9, 2013) .

2014 in the case of *Shell Oil Co. v. United States* that a cost reimbursement provision in AvGas Contracts between the Government and each of the plaintiff oil companies required the United States to reimburse these oil companies for wartime-related "charges", and the term "charges" included environmental cleanup costs incurred by these oil companies by reason of the production of avgas.[27] In fact, consistent with the Federal Circuit's decision and in that same case, the U.S. Court of Federal Claims recently ruled in the damages phase that the United States was responsible for 100% of these oil companies' cleanup costs at the site at issue under these AvGas Contracts.[28] Exxon's predecessors also had AvGas Contracts with the Government concerning avgas production at the Baytown and Baton Rouge Facilities that contained pertinently-identical cost reimbursement provisions; in fact, the Court of Federal Claims ruled that the United States was subject to liability to Exxon for environmental cleanup costs incurred by reason of the production of avgas under these AvGas Contracts at these two Sites.[29] Contractual arrangements, such as those memorialized in Exxon's AvGas Contracts, which establish the intent of the parties regarding the allocation of response costs are an oft-cited equitable factor in CERCLA equitable factor determinations. This factor should be considered as one of the several key factors in the allocation in this case.

23. **Given the scope of the cost reimbursement provision in the AvGas Contracts, under my allocation methodology the impact of Exxon's contract claim is that it picks up or incrementally assigns to the Government any remaining part of the allocated share of cleanup costs attributable to the WWII period and other applicable period[30] that has not**

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[27] *Shell Oil Co. v. United States,* 751 F.3d 1282, 1296 (Fed. Cir. 2014).

[28] *Shell Oil Co. v. United States,* 130 Fed. Cl. 8 (2017).

[29] *Exxon Mobil Corp. v. United States,* 101 Fed. Cl. 576 (2011).

[30] Under my allocation methodology with respect to Exxon's contract claims, I have assigned a contract value (i.e., contract-based allocated share to the United States) to both the years that the AvGas Contracts were in effect (i.e., 1942-45), and the subsequent years in which the "delay" calculations applied. See White Supplemental Report (January 2017), pp. 100-45 (describes the bases for my

been assigned to the Government solely on the basis of Exxon's CERCLA claims. As I noted above, in the *Shell* case the U.S. Court of Federal Claims recently ruled that the United States was responsible for 100% of those oil companies' cleanup costs at the site at issue under pertinently-identical AvGas Contracts during the period these contracts were in effect.[31] Consistent with this *Shell* decision, my allocation methodology solely with respect to Exxon's contract claims (and without consideration of Exxon's additional CERCLA claims) also assigns to the United States 100% of the cleanup costs at the Baytown and Baton Rouge Sites that are attributable to the WWII period. In other words, under my allocation methodology and based solely on consideration of Exxon's contract claims and without consideration of the effect of Exxon's CERCLA claims, I have assigned the United States' 100% of the cleanup costs at both Sites attributable to the WWII period.[32] Consequently, if the CERCLA allocation also takes into account Exxon's contract claims, then under my allocation methodology the Government is assigned 100% of the cleanup costs attributable to the WWII period at both Sites because the allocation for the contract claims picks up or incrementally assigns to the Government any part of the 100% allocated share than was not assigned to the Government under a CERCLA-only allocation.[33]

"delay" analysis, the "delay" calculations, and the period of time that the "delay" analysis is applied at each Site).

[31] *Shell Oil Co. v. United States,* 130 Fed. Cl. 8 (2017).

[32] For example, under my allocation methodology, the WWII year of 1942 was assigned 4.14% of the total response costs claimed by Exxon at the Baytown Site. Under my allocation methodology, the United States is assigned 100% of these response costs for 1942 (*i.e.,* all of the 4.14%) based solely on the impact of Exxon's contract claims and without consideration of Exxon's CERCLA claims.

[33] For example, and once again in regard to the WWII year of 1942, under my allocation methodology Exxon was assigned 2.28%, and the United States was initially assigned 1.86%, of the 4.14% of the total response costs assigned to 1942 under a CERCLA-only allocation that did not include consideration of the Exxon's contract claims. However, if the CERCLA allocation also includes consideration of the Government's contractual obligations under the AvGas Contracts, then the contract claims allocation would pick up the 2.28% initially assigned to Exxon, and incrementally assign this percentage to the United States, with the result that the U.S. is assigned the entire 4.14% in total response costs for the WWII year of 1942.

24. **Key differences in allocation methodology.** In my 2012 Rebuttal Report I provided an overview of the major differences in allocation methodology between Mr. Low's methodology and my methodology.[34] At its core, there are the following 5 major differences:

i. Basis for intra-class allocation: Use of time versus crude oil throughput as modified to reflect process control and waste handling improvements;

ii. Fraction of production under "control" or "war-related";

iii. Basis for inter-class allocation: "degree of involvement" or control;

iv. Impact of Government-directed delays in waste processing improvements; and

v. Scope of "contract" coverage

These issues have a pronounced impact on the allocation. Years-of-use, which Mr. Low relies on, by itself, is a major difference. Yet it is quite clear from the facility-specific data that this underlying assumption – that all else is equal – is factually incorrect. All things are not equal (as was the case during the war), the crude oil surrogate approach more closely resembles in the first place how waste was generated at the refineries. The crude oil production data demonstrate this. Even Dr. Kittrell has opined that there was a significant amount of new plant construction undertaken at both Facilities during the wartime period specifically to address Government dictates;[35] this had a significant impact on the pollution generated at these plants and would therefore have an effect on my allocation methodology. Crude oil as a surrogate more closely relates to what is generated – both as product and as waste – at the refineries. Likewise, where involvement occurs – the "front-end" versus the "back-end" – likewise accounts for major differences in our approaches. All of the issues above, taken together, differentiate our two approaches.

25. The impact of these differences can be seen in an analysis I performed in my 2017 Supplemental Report (an earlier version of which was also provided in my 2012 Rebuttal Report),

[34] Rebuttal Report of Richard Lane White (December 2012).

[35] Expert Report of Dr. James R. Kittrell (February 2015), p. 18 (Table 5).

where I showed the step-wise impact of these issues. Specifically, evaluating the 1943 results for Baytown, these differences have a nearly 80% impact on the analysis. Moreover, the impact of the AvGas Contract is that all of these costs should be covered by the contract itself. See **Table 1**.

TABLE 1

A Step-Wise Analysis of the 1943 Baytown Complex Allocation

Step	White 2017 Allocation	STEP 1 Adopt Low Years-of-Use	STEP 2 Then Adopt Low Back-End Involvement	STEP 3A Remove Certain Costs From Consideration	STEP 3B Then Adopt Low Degree of Involvement
Cost Assigned to 1943 Year	$ 2,239,030	$ 1,360,707	$ 1,360,707	$ 1,360,707	$ 1,360,707
Components of Production Subject to Allocation (Front-End vs. Back-End)	100%	100%	45.6%	45.6%	35.1%
Joint Impact on Cost Subject To Allocation	$ 2,239,030	$ 1,360,707	$ 620,383	$ 620,383	$ 477,156
Remove Certain Costs From Consideration				$ (143,227)	
Level of Involvement	47.81%	47.81%	47.81%	47.81%	44.96%
Allocation to U.S. in 1943	$ 1,070,513	$ 650,574	$ 296,614	$ 228,135	$ 214,531
Impact Share From White Allocation		$ (419,939) -39.23%	$ (773,899) -72.29%	$ (842,378) -78.69%	$ (855,982) -79.96%
Incremental Impact Incremental Share		$ (419,939) -39.23%	$ (353,960) -33.06%	$ (68,479) -6.40%	$ (13,604) -1.27%

White Supplemental Report (2017). Table 8.

26. **Specific issues with Mr. Low's December 2017 declaration (Low Decl.).** In Mr. Low's December 2017 declaration, he provides a set of spreadsheets intended to support his opinion regarding the Government's proposed allocation in this case. His declarations also include various additional exhibits that show model runs that are intended to represent various alternative allocation scenarios based on different inputs.

27. It is my opinion that Mr. Low's analyses, proposed allocation and alternative allocation scenarios do not accurately represent the operations at these Facilities, include various incorrect assumptions, and should not be relied on by the Court in this case. The following are just

a number of the factors that are reflected in the Low analyses which are incorrect, and should be rejected as the basis for allocation:

a. Mr. Low states that the allocation should limit the response cost impacts associated with the wartime production of avgas to the "amount of avgas produced as a percentage of crude throughput." Low Decl. ¶ 10. In essence, Mr. Low is proposing an "end-products" approach to allocation, in which the amount of waste attributed to the avgas production is based on how much avgas was produced, rather than on how much waste was actually generated by the avgas production process – the process needed to produce the avgas. Mr. Low finds favor in this "end-products" approach because even though both parties' technical experts concurred that all the crude oil had to be processed to make the avgas, due to the nature of crude oil and the refining process the Baytown and Baton Rouge refineries could only convert approximately 14% or 19%, respectively, of each barrel of crude into avgas. However, Mr. Low's "end-products" approach is inherently flawed because it fails to correlate response costs with the waste generated by the avgas production; under Mr. Low's approach, Exxon incurred the response costs only to investigate and remove the avgas product, not to investigate and remove the waste, which should be the basis for the allocation. Mr. Low's approach is also flawed because, as I summarized in ¶¶ 17-19 above and described fully in my January 2017 Supplemental Report, in order to comply with the Government's mandate for maximum avgas production, the production of avgas required the processing of all the crude oil, not some minor portion of it, and thus, the avgas production generated all the waste. Given the nature of a refinery and the avgas production process, the Government necessarily controlled the "front-end" of the refinery production process, and this required processing all of the crude oil to make as much avgas as possible, and this avgas production also resulted in various other

byproducts, which were either other war products or raw materials needed to make other war products.

b. Under his methodology, Mr. Low further attempts to reduce the response cost impacts associated with the wartime production of avgas based on Government expert "Dr. James Kittrell's opinion that imported blending agents justify cutting the response cost impacts . . . by approximately 50%". Low Decl. ¶ 10. In other words, under his "end-products" approach, Mr. Low suggests that the response cost impacts from the avgas production were only approximately 7% to 9% because avgas was 14% to 19% of these refineries' production by volume, and 50% of this avgas production (i.e., 7% to 9%) was from imported raw materials. However, the limited imports of additional raw materials to the Baytown and Baton Rouge refineries did not change the fact that these refineries still had to process all of the crude to maximize the production of avgas, and this generated the waste. *See* ¶¶ 17-19. In addition, according to a refinery materials volume analysis prepared by expert Mr. Beath regarding wartime production at the Baytown and Baton Rouge Facilities, both refineries exported to other refineries far greater amounts of raw materials than were imported from other refineries, the limited amounts of imported raw materials required additional processing that generated significant, additional waste, and nearly all of the avgas produced was from crude oil or other raw materials processed at these two refineries (i.e., 98.2% at Baytown, and 95.6% at Baton Rouge).[36] Thus, the two core aspects of Mr. Low's "end-products" approach – that the amount of avgas correlates to the amount of waste generated by avgas production, and that imports reduced the amount of waste generated by 50% - are technically invalid.

[36] Supplemental Report of John M. Beath (November 2014), pp. 5, 9 and 49-50.

c. Similarly, in his allocation methodology, Mr. Low also applies his flawed "end-products" approach to determining the response cost impacts associated with the production of "other war products" (aside from avgas), and also claims erroneously that only 22% and 25% of the products at the Baytown and Baton Rouge refineries, respectively, qualified as "other war products". Low Decl. ¶ 14. However, Mr. Low's "end-products" approach is equally flawed when applied to "other war products." Once again, all of the crude had to be processed to maximize avgas, and as the Government itself acknowledged in the AvGas Contracts themselves, "substantial quantities of motor fuel and other products must necessarily be produced and sold in connection with the production of 100 octane aviation gasoline";[37] in other words, these other products were byproducts of the avgas production. In any event, even when viewing the wartime operations from an end-products perspective, Mr. Low has grossly underestimated the war products percentage because avgas and other war products essentially represented 100% of these two refineries' production. For example, a 1943 internal Baytown refinery memorandum indicated that "current production of war products represents essentially 100% conversion of the Baytown refinery's operations"[38] and a 1943 Baton Rouge refinery report provided to Government officials indicated that critical and non-critical war products production accounted for 100% of the Facility's production.[39] Second,

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[37] See, e.g., "Contract between Defense Supplies Corporation and Standard Oil Company of New Jersey – 100-Octane Aviation Gasoline" dated Jan. 13, 1942 (A000501-A000518 at A000507).

[38] See Supplemental Report of A. J. Gravel (December 2012), p. 35 citing "Production of War Products at Humble Oil & Refining Company's Baytown Refinery" (Humble; Feb. 25, 1943) (A00395-A00407 at A00395).

[39] See Rebuttal Report of A. J. Gravel (December 2012), p. 36 citing "Major War Products – Baton Rouge Refinery" (May 30-31, 1943) (A000894-A000927 at A000907).

the Government acknowledged in its own 1946 war report that the "products for war" included, not only avgas, but also motor gasoline, kerosene, residual fuel oil, toluene, Navy special fuel oil and diesel fuel oil, tractor fuels, lubricants, asphalt and other products.[40] In fact, on a monthly basis the Government dictated to the Baytown and Baton Rouge refineries the amount of crude oil that would be allocated, and from this crude the amounts of avgas and various other "products for war" listed above to produce during avgas production,[41] and then followed up its monthly directives with regular telegrams setting forth new overnight instructions regarding the production of avgas and many of these other war products.[42]

d. Further, in his allocation methodology Mr. Low does not take into account the BOW's waste contribution and associated response cost impacts to the waste system at the Baytown Facility. The Government-owned and operated BOW was not only the predominant source of the groundwater contamination at the BOW itself (i.e., currently known as the Tankfarm 3000 Area) as discussed in ¶ 27.d below, but contributed significant waste and contamination to the refinery waste system at the Baytown Facility in two key respects. First, a substantial portion of the Baytown refinery avgas production operations were dedicated to making naphtha feedstocks that were then sent to the BOW for processing into nitration-grade toluene (for TNT production) and various byproducts, which byproducts were returned to the refinery for avgas

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[40] Frey, J. and H. Ide, *A History of the Petroleum Administration for War* (U.S. Govt. Prt. Off.; 1946) (excerpt) (A000157-A000226 at A000206 to A000209).

[41] See Rebuttal Report of A. J. Gravel (December 2012), p. 17; see, e.g., Govt. Ex. 53, Petroleum Industry Committee, Forecast of Operations – June 1944, 5/19/1944, US-GEN013463-78; Govt. Ex. 58, *ibid.*, Forecast of Operations – November 1944 (Oct. 19, 1944), US- GEN013602-21.

[42] See Rebuttal Report of A. J. Gravel (December 2012), pp. 17-21.

production.[43] In fact, over one-third of the output from the crude oil processed for avgas production simultaneously resulted in the production of a byproduct – naphtha – that was sent to the BOW for further processing.[44] Consequently, a significant portion of the waste generated by the crude oil processing was to make feedstocks for the BOW. Second, the BOW relied wholly on the refinery waste system for the processing of the BOW-generated wastewaters because the BOW lacked its own wastewater-handling facilities.[45] In my allocation, I attributed 25% of the wastes (and associated contamination and response costs) managed by the refinery waste system during the BOW's period of operation to the BOW – a very conservative allocation given that the BOW feedstocks accounted for over one-third of the output from crude processing, and this 25% figure does not even reflect the substantial amounts of BOW wastewaters sent to the refinery waste system.[46] In contrast, Mr. Low inexplicably attributed 0% of the wastes, contamination and associated response cost impacts at the refinery's waste system to the BOW during its period of operation – another critical error in his allocation methodology.

e. While Mr. Low and I assign various "degree of involvement" percentages to the U.S. for the wartime period, due to Mr. Low's flawed "end-products" approach, he only attributes to the U.S. a "degree of involvement" percentage for a very unreasonably small portion of the "other war products", *i.e.,* only

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[43] White Supplemental Report (January 2017), pp. 96-98.

[44] White Supplemental Report (January 2017), pp. 97-98 quoting "Data on War Projects, Baytown Refinery," (Humble Oil; June 2, 1943) (A00872-A000893 at A000883 to A000884). (This document indicates that 50,000 barrels per day ("B/D") of naptha from crude oil processing at the refinery was sent to the BOW, and according to this same document at that time the Baytown Refinery was processing 139,470 B/D of crude oil (A000890); thus, over one-third of the crude oil resulted in this naphtha feedstock for the BOW).

[45] Expert Report of A. J. Gravel (June 2012), p. 51; Expert Report of Jere M. Johnson (June 2012), p. 81.

[46] White Supplemental Report (January 2017), p. 98.

22% to 25% of the "other war products" at the Baytown and Baton Rouge refineries, respectively. The effect of Mr. Low's "end-products" approach is that he attributes to the U.S. no "degree of involvement" (*i.e.,* 0%) for at least two-thirds of the wartime operations at both refineries. In contrast, under my "front-end" approach, the U.S. is appropriately attributed a fair and reasonable "degree of involvement" percentage for the entire wartime operations at both refineries because the Government was involved in controlling all of the crude oil and other essential raw materials and all of the plant operations.

f. Mr. Low and I apply various waste contribution percentages with respect to the amounts of Plancor waste streams, relative to the amount of the refinery's wastewaters, that are processed in the refinery waste processing system at each Facility. However, under Mr. Low's allocation approach, the response cost impacts associated with these Plancor waste streams (as well as the overall wartime operations) is negligible because Mr. Low's "years-of-use" approach treats each year of operation the same in terms of waste generation, when in fact the historical record shows that the waste and contaminant contribution from the Plancors and other wartime operations was substantially greater than the post-war operations beginning in approximately the mid-1950s as a result of the effect on pollution reduction from the significant, post-war process control and waste handling improvements.

g. In his allocation methodology, Mr. Low does not adequately account for the parties' intent regarding the allocation of wartime-related response costs set forth in the AvGas Contracts. Mr. Low acknowledges the existence of the contractual cost reimbursement provision and that "the Government has accepted that it is required to indemnify Exxon for costs generated 'by reason of' the production of aviation gasoline," Low Decl. ¶ 10; however, Mr. Low's interpretation of the indemnity is far too narrow and contradicted by the

technical limitations on refinery operations. That is, Mr. Low's model assigns to the U.S. 100% of the "response cost impacts associated with the amount of avgas" but, as discussed in ¶ 27.a above, then defines these response costs impacts to be avgas production "as a percentage of crude throughput." *Id*. For the reasons discussed above (*i.e.*, that all of the crude had to be processed to maximize the production of avgas and these production operations generated the waste), Mr. Low's model severely understates the costs associated with the production of avgas and the scope of what costs the contractual cost reimbursement provision covers.

h. In addition, consistent with other allocation precedents, the allocation methodology should have reflected the fact that the Government imposed stringent restrictions on the implementation of waste processing improvements, and essentially denied various applications for the construction of pollution control equipment and facilities during WWII. In my view, this factor should be considered as part of the equitable allocation and is addressed in my allocation methodology as set forth in my January 2017 Supplemental Report.[47]

28. In addition to the various incorrect assumptions and other flawed aspects of Mr. Low's analyses that I described above in ¶¶ 26-27, which invalidate his entire allocation methodology because he applies them universally, Mr. Low also employs additional incorrect assumptions and factors in his allocation analysis for specific waste units at both Sites that he proposed to the Court in his January 2017 Supplemental Report, refers to in his declaration, and summarizes in Exhibit A attached to his declaration. *See* Low Decl. ¶ 8 (and attached Exhibit 8). These additional incorrect assumptions and factors further undermine his unit-by-unit analysis.

[47] See White Supplemental Report (January 2017), pp. 100-145.

Below I have described some of the most significant of these additional flawed aspects of his analysis for specific units.

a. South Landfarm at the Baytown Site: Mr. Low's analysis of this unit is flawed for several reasons. First, his methodology incorrectly applies an adjustment factor that reduces by 98% the amount of Separators 3M and 10 contaminated soils disposed of in the South Landfarm. According to experts Mr. Gravel and Mr. J. Johnson, there is a Federal nexus to the response costs for the South Landfarm primarily because contaminated soils were disposed there that were removed from around and below Separators 3M and 10 - two wartime-related waste units.[48] Mr. Low claims that only 2% of the wastes at the South Landfarm were contaminated soils from Separators 3M and 10 based on a cleanup/closure plan estimate of the amount of contaminated soils to be removed from those two units. However, the plan's estimate significantly underestimated the amount of contaminated soils removed from Separators 3M and 10 and the associated costs; for instance, the estimate indicated that the contaminated soil removal cost would be only approximately $45,000 for the two units, and the ultimate cost of the removal action was over $4 million for the two units.[49] In addition, Mr. Low's analysis further compounds this error by applying a 58-year period (i.e., 1928-85) for allocating the response costs, even though the landfarm itself was only in operation for approximately 15 years.[50] Mr. Low's flawed methodology results in an indefensible U.S. allocated share of only

[48] Expert Report of A. J. Gravel (June 2012), pp. 113-16; Expert Report of Jere M. Johnson (June 2012), pp. 82-83, 85.

[49] Closure Plan for Spill Basin 1, Separators 3A and 3M, and the South Landfarm (Jan. 20, 1985) (A003616-A003704 at A003671 (Spill Basin 1, which is Separator 10, cost estimate), and A003703 (Separator 3M cost estimate).

[50] Expert Report of A. J. Gravel (June 2012), page 114 (landfarm began operating in 1974 until its cleanup in 1990).

0.04% - $793.18 – for total South Landfarm response costs of approximately $1.7 million (as set forth in line item "B. South Landfarm Cleanup" under the columns titled "Adjusted U.S. Allocation" and "U.S. Share ($) Based on Exxon Claimed Costs", respectively).

b. Investigation of SWMUs at the Baytown Site: Mr. Low incorrectly suggests that Exxon failed to take into account that 50% of the SWMUs that were the subject of an ongoing RCRA Facility Investigation ("RFI") at the Baytown Site were not wartime-related. This is inaccurate; while I agree that 50% are not wartime-related, my allocation methodology fully addresses this issue by incorporating an allocation period that encompasses the entire period of refinery operations (i.e., 1920 to 1985), even though most of the SWMUs subject to the RFI operated for only one-third to one-half of this time period. In other words, my allocation methodology distributes these SWMUs investigation costs over a 66-year period (i.e., 1920 to 1985) and for most of these years the U.S. is not allocated any share of the costs, even though according to historical expert Mr. Gravel none of the wartime SWMUs were in operation for that entire time period, and the years of operation of almost all of these SWMUs ranged from 18 to 36 years.[51]

c. Facility Operations Area (FOA) at the Baytown Site: Mr. Low's analysis of the FOA investigation costs is flawed because he applies a time period of 1928 to 2011 for allocation of these costs. As I noted in ¶ 9 above, 1985 is the appropriate end point for the allocation of costs at the Baytown Facility because by or before this date the operations of the Facility would have been subject to stringent environmental regulatory and permitting requirements under both state and federal law and any post-1985 contamination would have been

[51] Expert Report of A. J. Gravel (June 2012), pp. 131-33.

negligible. Similarly, Mr. Low's 25-year increase of the end point beyond 1985 for the allocation of FOA investigation costs lacks any reasonable factual basis because the FOA investigations were primarily focused on releases of hazardous substances, and risks or threats to human health or the environment posed by those releases, from historical waste and contamination arising before 1985, particularly for example the SWMUs whose operations pre-date 1985 and other areas of historic groundwater contamination, and also given that any post-1985 contamination would have been negligible.[52]

d. BOW Groundwater Contamination at the Baytown Site: Mr. Low has inaccurately attributed 58% of the cleanup costs for the BOW groundwater contamination to the Baytown Refinery and 42% to the Baytown Chemical Plant. He bases this allocation on an allegation that Exxon itself provided this allocation and on no other justifiable factor. This is inaccurate; in fact, two of Exxon's experts – Messrs. Gagnon and Gravel – have opined that this is inaccurate. Contaminant contribution expert Mr. Gagnon prepared a detailed, technical report showing how the contaminants of concern in the groundwater were also constituents common in either the feedstocks processed at the BOW or products or byproducts manufactured at the BOW.[53] Historical expert Mr. Gravel showed how the historical locations of various BOW production, transport and storage facilities and their operations corresponded to the location and nature of this groundwater contamination.[54] These technical and historical analyses establish that the wartime BOW operations were the predominant source of this contamination. Second, another unjustifiable element of Mr.

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[52] Rebuttal Report of Stephen A. Johnson (March 2017), pp. 66-76; Expert Report of A. J. Gravel (June 2012), p. 133.

[53] Rebuttal Report of Peter J. Gagnon (December 2012), pp. 11-14.

[54] Expert Report of A. J. Gravel (June 2012), pp. 120-23.

Low's allocation of these cleanup costs is that he allocates part of the responsibility for this BOW groundwater contamination to a period of time when the land where the groundwater contamination exists was undeveloped. Specifically, Mr. Low's allocation for these cleanup costs includes the non-wartime period of 1928 to 1940. However, the BOW was not constructed until 1941, and was constructed on pristine, undeveloped land, and therefore, no activity was occurring on this land during the 1928 to 1940 period that contributed to this groundwater contamination.[55] Third, Mr. Low further skews his allocation calculations by suggesting that a 1993 investigatory report indicated that the source of this groundwater contamination was post-war operations, when in fact this 1993 report was never intended to address whether the BOW operations was the source of this contamination in the first place.[56] Accordingly, Mr. Low's proposed allocation for the cleanup costs associated with the BOW groundwater contamination rely on a number of inaccurate assumptions that result in a substantial underestimate of the BOW operations' contribution to this contamination and the Government's appropriate allocated share of the costs.

e. Old Silt Pond and Rice Paddy Landfarm at the Baton Rouge Site: Mr. Low's analysis of these two waste units is fundamentally flawed; he states that the units did not begin to operate until after WWII and therefore assumes that the wartime operations did not contribute to the contamination that have been the subject of Exxon's cleanup actions. However, Mr. Low's analysis fails to take

[55] Expert Report of A. J. Gravel (June 2012), p. 43 (Figure 5) and p. 47 (Figure 7) (the 1938 aerial photograph of the Baytown Facility in Figure 7 shows undeveloped land in the subsequent location of the BOW and the groundwater contamination shown in Figure 5).

[56] Rebuttal Report of A. J. Gravel (December 2012), p. 33 ("The investigation was not designed to provide a retrospective forensic source analysis covering the entire period of BOW operations").

into account that both units had to be cleaned up because of the underlying Shallow Fill Zone that was composed of contaminated waste materials generated by the wartime operations. Based on analysis of historical aerial photographs, other historical records and cleanup-related reports, three different experts – aerial photography analysis expert Wayne Grip, historical expert Mr. Gravel, and refinery waste remediation expert Mr. J. Johnson – confirmed numerous separate factual bases establishing that wastes and wastewaters generated by the WWII operations at the Baton Rouge Facility were a very significant source of the contaminated fill materials and other waste materials – known as the Shallow Fill Zone – at these waste units, and subsequent wartime-related wastes continued to add to the waste and contamination in the Shallow Fill Zone and these units during the late 1940s and early 1950s. These numerous separate factual bases and supporting historical and technical documents are detailed in these experts' respective reports.[57] In addition, according to Michael Pisani, who was the environmental consultant conducting these response actions under the approval and oversight of the Louisiana Environmental Protection Agency, and prepared the related environmental reports, the wartime-related, underlying contaminated fill materials at these two units were the "driver" for the nature and scope of the cleanup activities and their costs, and this was further confirmed by a review of the cleanup-related documentation by cleanup process expert Mr. S. Johnson.[58]

[57] Rebuttal Report of Wayne M. Grip (December 2012), pp. 7-10 (and attached historical aerial photographs); Expert Report of A. J. Gravel (June 2012), pp. 203-04 and 211-17; Expert Report of Jere M. Johnson (June 2012), pp. 97 and 101.

[58] Declaration of Michael Pisani (December 2017) (attached to Exxon's summary judgment motion as Exhibit 12); Expert Report of Stephen M. Johnson (May 2016), pp. 99-101 and 107-09.

29. For reasons set forth in my reports as well as in this declaration, I do not agree with the individual, unit by unit analysis proposed by Mr. Low.

I declare that the foregoing is true and correct under penalty of perjury of the laws of the United States. Executed on May 9, 2018.

Richard Lane White